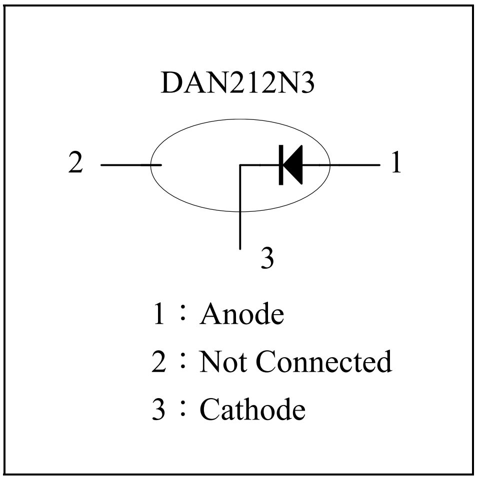
High –speed switching diode

DAN212N3

Description

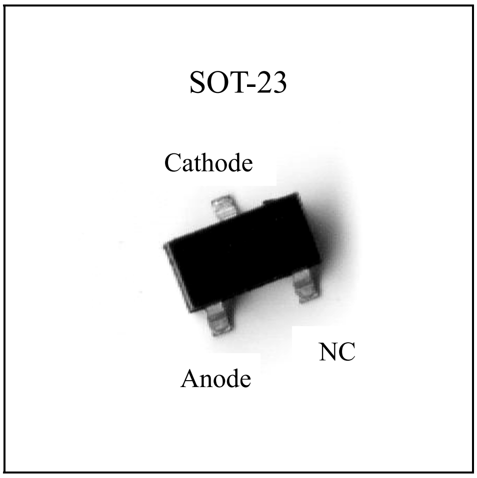
The DAN212N3 is a high-speed switching diode fabricated in planar technology, and encapsulated in the small SOT-23 plastic SMD package.

Equivalent Circuit



1 : Anode
2 : Not Connected
3 : Cathode

Outline



Features

- Small plastic SMD package
- High switching speed: max. 4ns
- Continuous reverse voltage: max. 100V
- Repetitive peak reverse voltage: max. 110V
- Repetitive peak forward current: max. 500mA.

Applications

- High-speed switching in thick and thin-film circuits.

Ordering Information

Device	Package	Shipping	Marking
DAN212N3	SOT-23 (Pb-free)	3000 pcs / Tape & Reel	A6

Absolute Maximum Ratings @TA=25℃

Parameters	Symbol	Min	Max	Unit
Repetitive peak reverse voltage	V_{RRM}	-	110	V
Continuous reverse voltage	V_R	-	100	V
Continuous forward current	I_F	-	200	mA
Repetitive peak forward current	I_{FRM}		500	mA
Non-repetitive peak forward current @square wave, Tj=125℃ prior to surge t=1µs t=1ms t=1s	I_{FSM}	- - -	4 1 0.5	A A A
Total power dissipation(Note 1)	Ptot		250	mW
Junction Temperature	T_j	-	150	°C
Storage Temperature	T_{stg}	-65	+150	°C

Note 1: Device mounted on an FR-4 PCB.

Electrical Characteristics @ Tj=25℃ unless otherwise specified

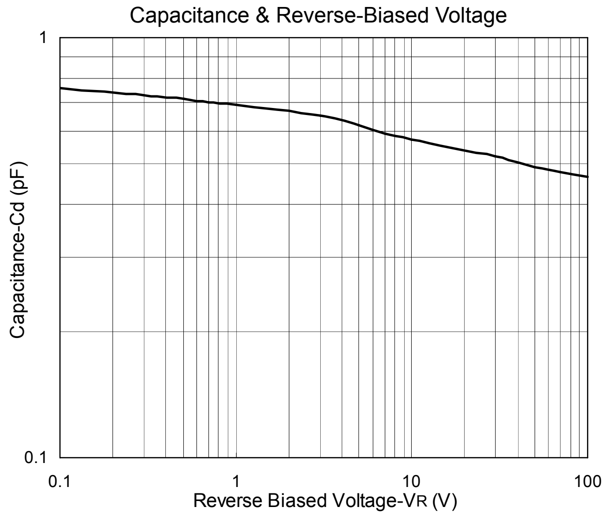
Parameters	Symbol	Conditions	Min	Typ.	Max	Unit
Forward voltage	V_F	I_F=1mA I_F=10mA I_F=50mA I_F=150mA	-	-	715 855 1 1.25	mV mV V V
Reverse current	I_R	V_R=25V V_R=100V V_R=25V,Tj=150℃ V_R=100V,Tj=150℃	-	-	30 1 30 50	nA µA µA µA
Diode capacitance	Cd	V_R=0V, f=1MHz	-	-	1.5	pF
Reverse recovery time	trr	when switched from I_F=10mA to I_R=10mA,R_L=100Ω, measured at I_R=1mA	-	-	4	ns
Forward recovery voltage	Vfr	when switched from I_F=10mA tr=20ns	-	-	1.75	V

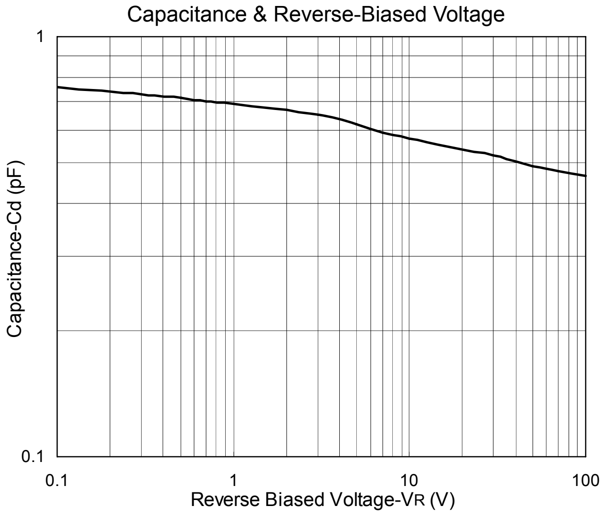
Thermal Characteristics

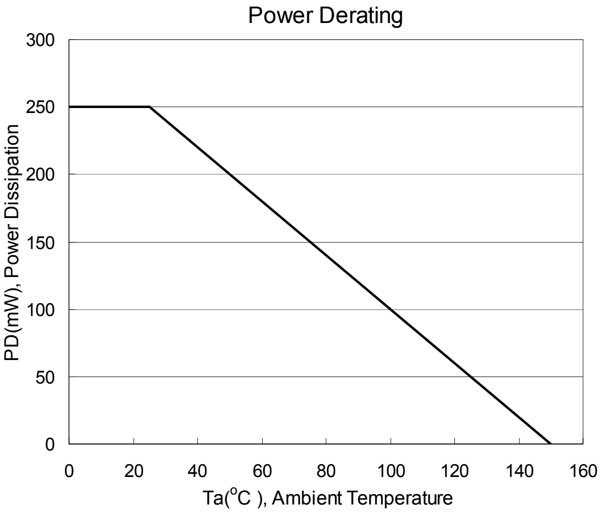
Symbol	Parameter	Conditions	Value	Unit
Rth,j-tp	thermal resistance from junction to tie-point		360	℃/W
Rth, j-a	thermal resistance from junction to ambient	Note 1	500	℃/W

Note 1: Device mounted on an FR-4 PCB.

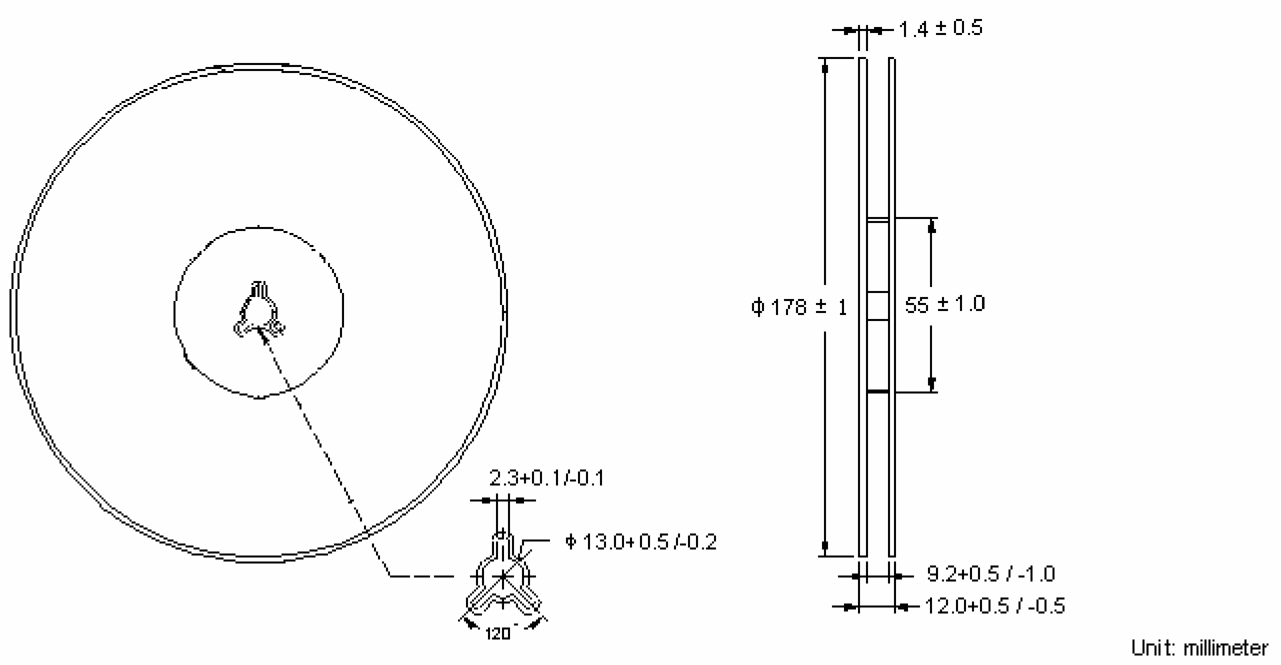
Characteristic Curves



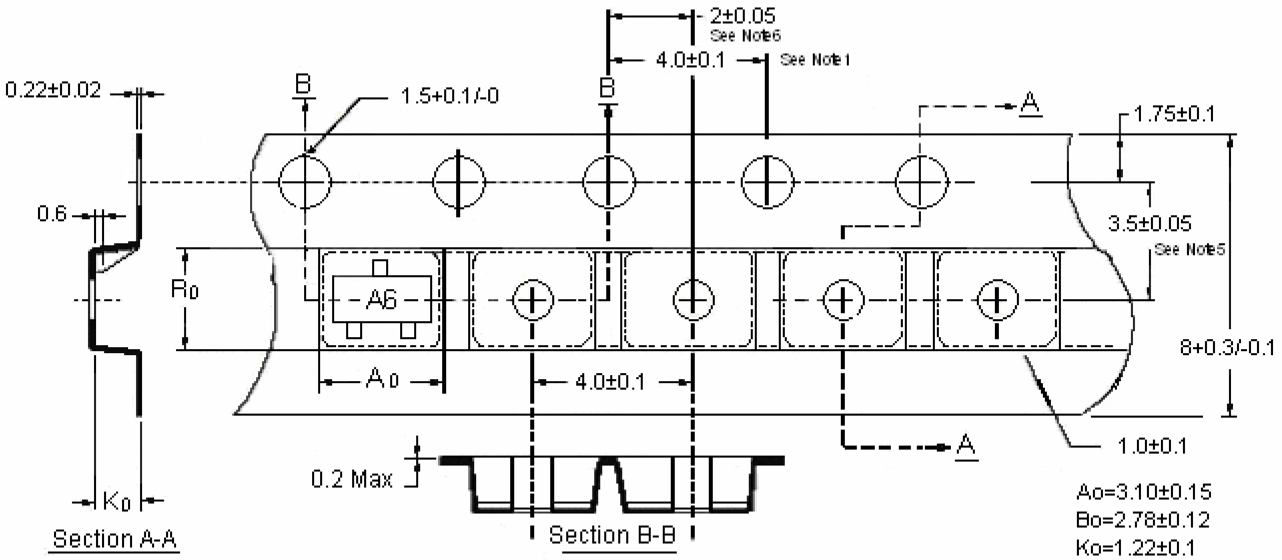




Reel Dimension



Carrier Tape Dimension



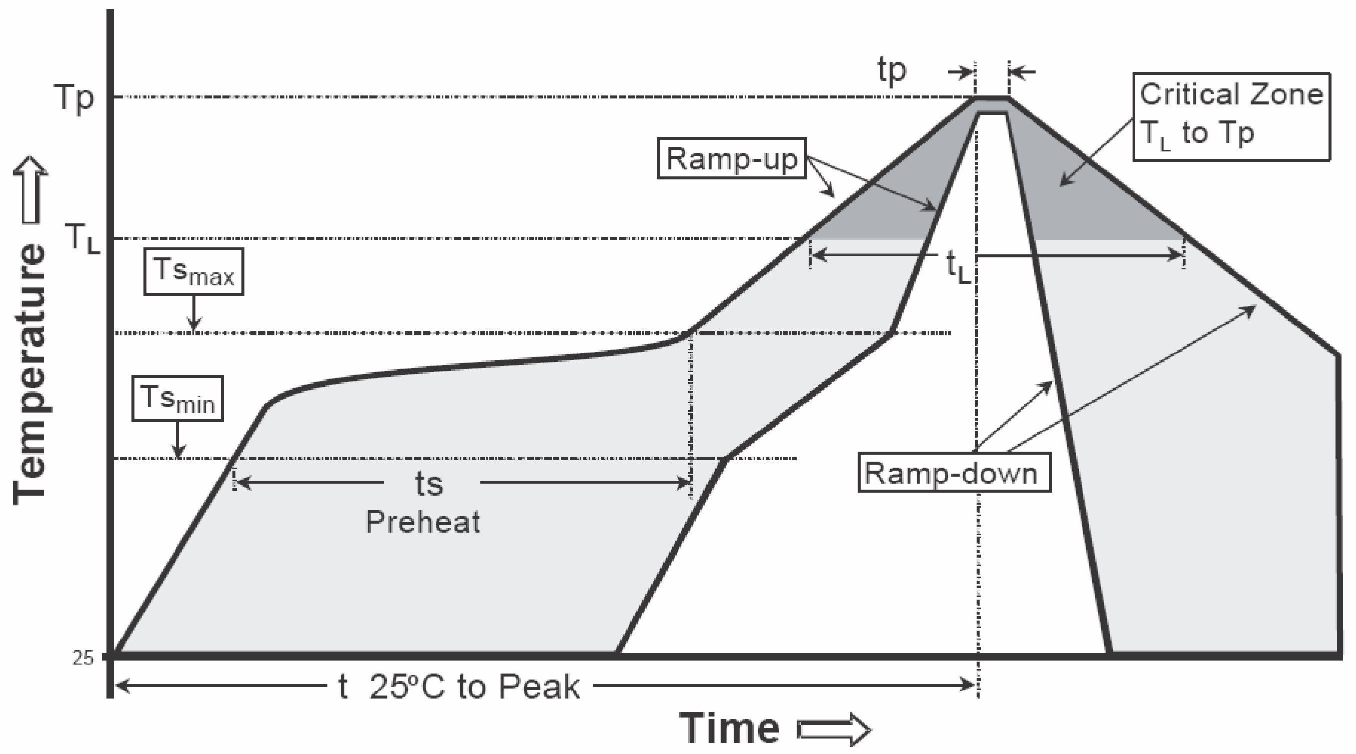
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

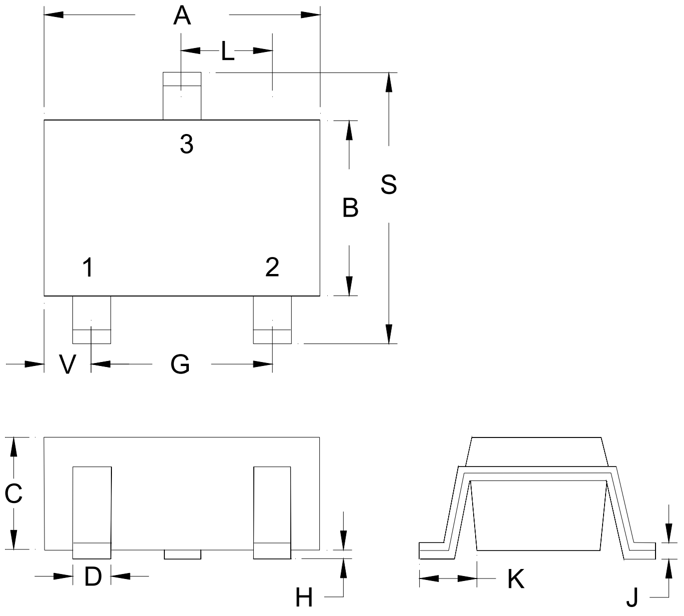
Recommended temperature profile for IR reflow



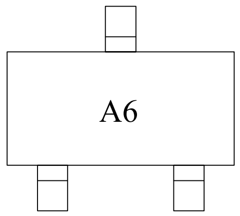
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-23 Dimension



Marking:



3-Lead SOT-23 Plastic
Surface Mounted Package
CYStek Package Code: N3

Style:Pin.1. Anode 2. Not Connected
3.Cathode

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1083	2.10	2.75
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0005	0.0040	0.013	0.10					

Notes: 1.Controlling dimension: millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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